

### REMARKS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

Claims 1-6 are pending. Claims 1-3 and 5-6 are amended. No new matter is introduced.

In the outstanding Office Action, the Title was objected to; the Abstract was objected to; Claims 1-5 were rejected under 35 U.S.C. § 112, first paragraph; and Claims 1-4 and 6 were rejected under 35 U.S.C. § 102(a) as being anticipated by Liu (“AOTO: Adaptive Overlay Topology Optimization in Unstructured P2P Systems”, 04 December 2003, hereafter “Liu”); and Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu in further view of Traversat et al. (U.S. Patent Application Publication No. 2002/0147771, hereafter “Traversat”).

In reply, the Title is amended to maintain a breadth consistent with the multiple embodiments of the specification, and the Abstract is amended to adopt Examiner’s suggestion. Therefore, it is respectfully requested that the objections to the Title and Abstract be withdrawn.

The outstanding Office Action rejected Claims 1-5 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Specifically, the Official Action notes that “there is no support in the original claims (nor in the specification) that the node is a physical device.”<sup>1</sup> Applicants respectfully traverse the rejection, as non-limiting support for Claims 1-5 can be found at least in Figures 6A and 6B, and in the corresponding discussion on pages 6-10 of the specification. For example, the nodes are described as having IP addresses, and existing in a network having virtual connections therebetween. However, the nodes themselves are not described as virtual devices. One of

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<sup>1</sup> See the outstanding Office Action at page 3, item 6.

ordinary skill in the art would realize that physical devices, such as routers which perform the described functions, are embraced by the description.

MPEP § 2163.04 states that the written description requirement of 35 U.S.C. § 112, first paragraph is met, unless one of ordinary skill in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. It is therefore submitted that Claims 1-5 conform to the requirements of 35 U.S.C. § 112, first paragraph. Accordingly, it is respectfully requested that the rejection of Claims 1-5 under 35 U.S.C. § 112, first paragraph, be withdrawn.

If, however, the Examiner continues to disagree that Claims 1-5 conform to the requirements of 35 U.S.C. § 112, first paragraph, it is respectfully requested that the Examiner provide a showing of substantial evidence, why a person skilled in the art would not recognize in the present disclosure a description of "a node device" defined by the claims.<sup>2</sup>

With respect to the rejection of Claims 1-4 and 6 as being anticipated by Liu, amended Claim 1 is amended to recite a node device which newly joins a network formed by a plurality of nodes and further recites that the node comprises:

a virtual connection establisher unit configured to establish a plurality of virtual connections, each virtual connection being between the node device and one of the plurality of existing nodes;

a weighted metric value calculator unit configured to calculate a weighted metric value through each of the virtual connections, the weighted metric value corresponding to a plurality of routes to one node of the plurality of existing nodes via one of the virtual connections, and *the weighted metric value being weighted according to a number of adjacent nodes to the one node*;

*a total metric value calculator unit configured to calculate a total metric value corresponding to weighted metric values calculated for each of the virtual connections; and*

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<sup>2</sup> MPEP § 2163.04.

a connection establisher unit configured to establish a connection with an existing node of the plurality of existing nodes corresponding to the virtual connection having a smallest total metric value. (Emphasis added).

Turning to the applied reference, Liu describes an adaptive overlay topology optimization (AOTO) method used to optimize unstructured peer-to-peer networks, which includes two steps: a selective flooding step and an active topology step.<sup>3</sup> In the respective flooding step, Liu describes building an overlay multicast tree in which each of the peers probes its immediate logical neighbor to determine a cost of connection to that neighbor.<sup>4</sup> Liu then describes that each peer builds a cost table with a cost of connection and shares the table with its immediate logical neighbors.<sup>5</sup> In the active topology step, Liu describes that the cost of connections are used to reorganize the network topology.<sup>6</sup>

Further, Liu describes that a cost of connection may be measured as a network delay.<sup>7</sup> However, Liu does not describe that the weighted metric value is weighted according to a number of adjacent nodes to the one node, as recited in amended Claim 1. Liu only describes adding the costs of connection from a node to its immediate logical neighbors *without any weighting factor*.<sup>8</sup> Thus, Liu fails to disclose the claimed weighted metric value calculator recited in amended Claim 1.

Moreover, none of the cited references disclose a total metric value calculator unit as recited in amended Claim 1. Therefore, it is submitted that amended Claim 1, together with its corresponding dependent claims, is in condition for allowance.

Though Claim 6 is of a different statutory class than amended Claim 1, Claim 6 recites substantially the similar features, and is therefore in condition for allowance for

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<sup>3</sup> Liu at page 4187, the paragraph beginning with “while retaining the desired . . .”

<sup>4</sup> Liu at page 4187, the paragraph beginning under the heading, “B. Selective Flooding,” and bridging to page 4188.

<sup>5</sup> Liu at pages 4187-4188, the paragraph beginning under the heading, “B. Selective Flooding.”

<sup>6</sup> Liu at page 4188, the paragraph under the heading, “C. Active Topology.”

<sup>7</sup> Liu at page 4188, lines 3-4.

<sup>8</sup> Liu at page 4187, subsection A, “Inefficient Scenarios.”

substantially the same reasons. Accordingly, it is respectfully requested that the rejection of Claims 1-4 and 6 under 35 U.S.C. § 102(a) be withdrawn.

Regarding the rejection of Claim 5 as being unpatentable over Liu in view of Traversat, amended Claim 5 depends from amended Claim 1 through intervening Claims 2 and 3. As discussed above, Liu fails to disclose every element of amended Claim 1, and therefore also fails to disclose every element of amended Claim 5. Traversat does not cure this deficiency in Liu. As such, no combination of Liu and Traversat describes every element recited in amended Claim 5. Accordingly, it is submitted that amended Claim 5 is in condition for allowance, and it is respectfully requested that the rejection of amended Claim 5 under 35 U.S.C. § 103(a) be withdrawn.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1-5 is earnestly solicited.

Respectfully submitted,

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